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OBSERVATION VERSUS EXPERIMENTATION¹

IN gatherings of scientific men such as this one, it is customary to have a number of non-technical addresses, which often take the form of general surveys of certain fields of science, with summaries of what is known in various directions, and with indications of problems which await solution. The topic which I have chosen, however, would indicate that for the moment it seems to me worth while to stop and discuss somewhat the methods of science rather than the results. No doubt all of us look upon both observation and experimentation as necessary evils, the means to arrive at ends or results which are much more important and attractive in themselves than are the processes of obtaining them.

Before a company of astronomers the contest between observation and experimentation might be anticipated to mean a discussion of the relative merits of the old and new astronomy, the astronomy of position, or of precision as its devotees often call it, and the newer field of astrophysics. Or the contest might be between the whole field of astronomy on the one side and the domain of physics and other experimental sciences on the other, for we astronomers have the reputation of being precise and painstaking observers, while the experimenters have, to our minds at least, the habit of spending most of their energies in getting ready to be precise, and then when they are prepared to take what we would call observations, their aim is achieved and they pass on to something else. But my purpose is rather to consider somewhat the struggle which often goes on in the mind of the investigator himself, whether he shall after a certain amount of

¹Address of the retiring vice-president and chairman of Section D—Astronomy, American Association for the Advancement of Science, Toronto, December, 1921.